

thermoforming and opening[,];

a feeder [appropriate] for feeding thermoforming material [in ribbon or plate (14) form] between each female die (12) and counter-die (13)[,];

cutting means [associated with the die and counter-die] for cutting [the ribbon or plate] thermoforming material [, immediately after the closure of the die (12) and counter-die (13),];

[at least one work or] a treatment station for articles (15) thermoformed [in the or each die (12) or counter-die (13),];

extraction pick-up means (16) [designed to withdraw] withdrawning a thermoformed article [molding] from the female die (12) [and either to convey the same to one or more work or treatment stations or to transfer it to a receiving conveying template (17) which has the same seating configuration as that of the female die (12) and is arranged to move the thermoformed articles (15) past one or more work treatment stations], wherein said extraction pick-up means comprises a head (16) arranged to be sequentially inserted between each female die (12) and counter-die (13) concomitantly with each opening of the same; and

means of retention suitable for engaging each thermoformed article [with the respective extraction head or with the respective receiving template, thus ensuring its positioning in correct set during conveyance through the work or treatment station or stations].

2. Canceled without prejudice.

3. (Amended) A thermoforming apparatus as claimed in Claim [2] 1, [characterised in that it comprises] further comprising a carousel conveyor (20) with a plurality of bearing arms, each of which supports a respective [plate-like] head (17) fitted with said retention means for the retention of the thermoformed articles (15) [in the correct set while they are being conveyed, stepwise and synchronously with the opening-closing rate of the dies (12), through the work or treatment station or stations, positioned around the carousel conveyor].

4. (Amended) An apparatus as claimed in Claim 3, [characterised in that] wherein [the] said retention means for each [plate-shaped] extraction head (17) comprises a hole [or seat] through the [said plate-shaped] extraction head for each thermoformed article to be extracted, each hole being machined along its thickness to obtain two annular surfaces reamed in opposite directions and delimiting between them an equatorial shoulder (16d) with a slightly undercut, internal angle of incidence, in order to allow insertion by the thrust of a rimmed thermoformed article (15) and enable it to be resiliently constrained and held firmly in position at its rim.

5. (Amended) A thermoforming apparatus as claimed in Claim [2] 1, [characterized in that it comprises] further comprising:

a chain [or chains] conveyor (24) [each] wound by a pair of chain wheels and having a run (27) thereof extending along the respective die (12) or counter-die (13) but beyond the encumbrance thereof[,]; and

a plurality of extraction plates (16) carried at predetermined intervals from each other on [the] said conveyor (24) and each fitted with [the] said retention means for retaining the thermoformed articles (15) in the proper set during their conveyance.

Subj 3
6. (Twice Amended) A thermoformed apparatus as claimed in Claim [1] 5, [characterized in that it comprises] further comprising a template conveyor (24) extending through the [work or] treatment station [or stations] and moving stepwise at the opening-closure rate of the dies (12) for receiving [a molding or] thermoformed articles (15) from an extraction plate (16) and conveying them in sequence to the [work or] treatment station [or stations] along the template conveyor (24).

Subj 4
7. (Amended) A thermoforming apparatus as claimed in Claim 6, [characterized in

that the] wherein said template conveyor (24) comprises two alternately movable templates (17), [once on one side of the die (12) and once on the other,] so that a template (17) is moved laterally in relation to the female die (12) at a [work or] treatment station, while the other one is in front of it to receive an article molding from the extraction plate (16).

8. (Amended) A thermoforming apparatus as claimed in Claim 6, [characterized in that the] wherein said template conveyor (24) is a chain [or chains] conveyor which comprises a pair of chain wheels (26) around which [the or] a respective chain (25) is wound, a plurality of [plate-like] templates (17) carried, spaced at a predetermined distance from each other, on the said conveyor (24) and each fitted with [the] said retention means for retaining the thermoformed articles (15) in the proper set during their conveyance.

9. (Amended) A thermoforming apparatus as claimed in Claim [5] 6, [characterized in that the] wherein said template conveyor (24) comprises a train of articulated bearing slides (32) or carriages (33) for a respective template (17) moving through the [work or] treatment station [or stations].

10. (Twice Amended) A thermoforming apparatus as claimed in Claims 6, [characterised in that the] wherein said retention means on each template comprises a truncated conical collar (38) seated in each receiving hole for precise location of a respective thermoformed article (15) on the surface of each template (17) facing the extraction plate of plates (16).

11. (Amended) A thermoforming apparatus as claimed in Claim 10, [characterised in that the] wherein said collar (38) is constituted of resiliently deformable material suitable for exercising a moderate retentive pressure on the external surface of a thermoformed article (15).

12. (Amended) A thermoforming apparatus as claimed in Claim 10, [characterised in that the] wherein said collar (38) comprises a plurality of resiliently loaded ratchets (48), installed in said collar and movable towards its internal diameter for engaging with the external surface of a thermoformed article (15) in a respective receiving seat.

13. (Amended) A thermoforming apparatus as claimed in Claim 10, [characterised in that the] wherein said collar (38) comprises suction orifices which exert on the thermoformed article (15) a suction action to hold it in the proper set in its respective receiving seat and with its rim abutting against the template (17).

14. A thermoforming apparatus as claimed in Claim 10, [characterised in that] wherein each template (17) at each flanged receiving set for thermoformed rimmed articles (15) has a peripheral recess formed on the surface of the template (17) facing the extraction plate or plates (16) for engaging the rim of a respective article (15) installed in it.

15. (Twice Amended) A thermoforming apparatus as claimed in Claim 6, [characterised in that the] wherein said retention means for each template (17) comprises a two-diameter adaptor collar (39) installable in each receiving seat and having an internal diameter delimited by a tapered under section, an undercut/intermediate section with a negative angle alpha, an annular shoulder downstream of the undercut section, to be able to receive from the above a flanged thermoformed article (15) and snap-engage its rim at its undercut.

16. (Amended) A thermoforming apparatus as claimed in Claim 6, [characterised in that the] wherein said retention means for each template (17) comprises receiving holes for the thermoformed articles lower portion, but with a slightly smaller internal diameter than the external dimensions of the thermoformed articles (15) to be received close to its

rim, so that the thermoformed article (15) is resiliently constrained and then steadily bedded in the respective receiving hole.

17. (Twice Amended) A thermoforming apparatus as claimed in Claim 6, [characterised in that the] wherein said retention means of each template (17) comprises eccentric mechanical arrests (50), each of which is fitted at a respective receiving hole of a template (17) and is movable between an operating position in which it engages the rim of a flanged thermoformed article (15) and an inoperative releasing position.

18. (Amended) A thermoforming apparatus as claimed in Claim 17, [characterised in that the] wherein said arrests are controlled by a rack operated by a suitable motion source.

19. (Twice Amended) A thermoforming apparatus as claimed in any of Claim 6, [characterised in that the] wherein said retention means comprises air jets (53) for sinking each of the articles (15) into the receiving holes on each template (17).

20. (Twice Amended) A thermoforming apparatus as claimed in Claims 6, [characterised in that the] wherein said retention means comprises a cup-shaped component (54, 61) by acting through at least one orifice (55) in the bottom of the cup-shaped component.

21. (Amended) A thermoforming apparatus as claimed in Claim [21] 20, [characterised in that it comprises] further comprising a push rod (56) for expelling the thermoformed article (15) from the cup-shaped component (54, 61) by acting through at least one orifice (55) in the bottom of the cup-shaped component.

22. (Twice Amended) A thermoforming apparatus as claimed in any one of Claim 6,

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[characterised in that the] wherein said retention means comprises a support shoulder for shallow, thermoformed articles arranged between each receiving seat of the template (17), [the] said shoulder [having two diameters or else] including an annular projection which engages the internal diameter of the rim of the article.

23. (Twice Amended) A thermoforming apparatus as claimed in Claim 6, [characterised in that the] wherein said retention means comprises a push-rod which rises from a surface of each template (17) [to a respective dummy receiving seat].
24. (Twice Amended) A thermoforming apparatus as claimed in Claim 6, [characterised in that the] wherein said retention means comprises at least one annular recess, in which the free rim of an upturned hollow article (15) abuts [and] a movable push [road] rod (56) for removal of the article (15).

REMARKS

This response adds an abstract to the above-identified application. Claims 1-24 were presented for examination. Claims 1 and 3-24 and the specification have been amended. Claim 2 has been canceled. Reconsideration is respectfully requested.

In the Office Action, the Examiner has noted that the application does not contain an abstract of the disclosure as required by 37 C.F.R. §1.72(b). Accordingly, the Applicant submits herewith in this amendment an abstract of the disclosure.

Also, the Examiner has stated that the Applicant should provide appropriate headings for the specification. The specification has been amended accordingly to provide the headings as suggested by the Examiner and as detailed in 37 C.F.R. §1.77. Additionally, the Examiner has stated that brief descriptions of Figures 1-6 have not been properly provided. Thus, in addition